

CLAIMS

- 1 1. A device for operating on a moving laminar material, in particular for a
2 bag-making machine, said machine being of the type having at least one work
3 unit (2) and actuating members (27) adapted to cause advancing of the laminar
4 material (3) at a reference speed V_R , the device comprising:
5 – at least one rotating body (6) having a rotation axis (6a) and a rotation
6 speed ω ,
7 – at least one guide member (5) in engagement with said rotating body (6)
8 at an eccentric position with respect to said rotation axis (6a) and movable along
9 a circumferential trajectory (7) having a work stretch (7a),
10 – said guide member (5) being connected with said work unit (2) and
11 having, in said circumferential trajectory (7), a tangential speed T with a work
12 component T_L parallel to the laminar material (3),
13 – and drive means (9) designed to selectively vary said rotation speed ω
14 and reference speed V_R in a manner adapted to make said work component T_L
15 in said work stretch (7a) and said reference speed V_R substantially equal to each
16 other.
- 1 2. A device as claimed in Claim 1, wherein alternately said reference speed
2 V_R and rotation speed ω are substantially constant and wherein said drive means
3 (9) is adapted to alternately impose a variable speed to said rotating body (6)
4 and laminar material (3) which is correlated with the cosine of a work angle α
5 included between said tangential speed T and work component T_L .
- 1 3. A device as claimed in Claim 2, wherein said reference speed V_R of said
2 laminar material (3) is substantially constant and wherein said drive means (9) is
3 adapted to impose a rotation speed ω to said rotating body (6) and a tangential

4 speed T to said guide member (5) that are variable in inverse proportion to the
5 cosine of said work angle α .

1 **4.** A device as claimed in Claim 3, wherein a symmetry plane (8) is
2 provided that is perpendicular to the laminar material (3) and passes through
3 said rotation axis (6a) and wherein said work stretch (7a) extends at said
4 symmetry plane (8) and transversely of same, and at said rotation axis (6a) it
5 defines a central angle β equal to or smaller than 120° , said guide member (5)
6 having a tangential speed T included between a minimum value equal to that of
7 the reference speed V_R at said symmetry plane (8), and a maximum value equal
8 to or smaller than twice said minimum value.

1 **5.** A device as claimed in Claim 2, wherein said rotation speed ω of said
2 rotating body (6) is substantially constant and wherein said drive means (9) is
3 active on said actuating members (27) of said laminar material (3) to impose a
4 reference speed V_R to said laminar material (3) that is variable in proportion to
5 the cosine of said work angle α .

1 **6.** A device as claimed in Claim 1, wherein said drive means (9) comprises
2 at least one electric motor (10), electronic devices (12) active on said electric
3 motor (10) to vary the rotation speed of same, and sensors (13, 16) to detect at
4 least the position of said guide member (5) along said circumferential trajectory
5 (7), said electronic devices (12) being interlocked with said sensors (13, 16).

1 **7.** A device as claimed in Claim 6, wherein said electric motor (10) is a
2 direct current brushless motor and wherein said electronic devices (12) comprise
3 SLM or Speed Loop Module circuits.

1 **8.** A device as claimed in Claim 1, wherein said drive means (9) comprises
2 at least one motor (10) and transmission members extending downstream of said

3 motor (10), and wherein said transmission members comprise non-circular
4 kinematic elements adapted to convert a substantially constant rotation speed of
5 said motor (10) into a variable rotation speed.

1 **9.** A device as claimed in Claim 8, wherein said non-circular kinematic
2 elements comprise at least one shaped pulley (17) having a major symmetry axis
3 (17b) and a minor symmetry axis (17c) orthogonal to each other and
4 substantially defining virtual diameters of virtual wheels (W_1, W_2), a rotation
5 center (17a) of said shaped pulley (17) being provided at the intersection of said
6 major and minor symmetry axes (17b, 17c).

1 **10.** A device as claimed in Claim 1, wherein means (20) for adjusting the
2 position of said guide member (5) relative to said rotation axis (6a) is provided, in
3 order to select the diameter of said circumferential trajectory (7).

1 **11.** A device as claimed in Claim 1, wherein support means (4) interposed
2 between the work unit (2) and said guide member (5) is provided, which comprises
3 deformable compensation devices (21) adapted to allow position variations of the
4 work unit (2) in a direction perpendicular to the laminar material (3) in the
5 presence of stresses in a direction perpendicular to the laminar material (3).

1 **12.** A device as claimed in Claim 1, wherein support means (4) interposed
2 between the work unit (2) and said guide member (5) is provided, which
3 comprises at least one framework adapted to keep the angular lying
4 arrangement of the work unit (2) substantially constant with respect to the
5 laminar material (3).

1 **13.** A device as claimed in Claim 12, wherein said framework comprises a
2 frame having two crosspieces (24) that are substantially parallel to each other, at
3 least one of said crosspieces (24) being movable together with one said guide

4 member (5), and at least two column-shaped posts (25) extending between said
5 crosspieces (24) at right angles thereto, said column-shaped posts (25) slidably
6 engaging at least one of said crosspieces (24).

1 **14.** A device as claimed in Claim 13, wherein one said crosspiece (24) is
2 movable together with one said guide member (6) and a second crosspiece
3 embodies a carriage (29) constrained to carry out a linear movement and driven
4 by said column-shaped posts (25).

1 **15.** A device as claimed in Claim 12, wherein a plurality of said rotating
2 bodies (6) is provided and they are disposed consecutive to each other in a
3 direction parallel to said reference speed V_R , and wherein said framework
4 comprises at least one crosspiece (24) extending like a tie-rod and adapted to
5 interlock said rotating bodies (6) with each other on rotation.

1 **16.** A process for operating on a moving laminar material, in particular for a
2 bag-making machine, said machine being of the type having at least one work
3 unit and actuating members adapted to cause advancing of the laminar material
4 at a reference speed, the process consisting: in moving at least one guide
5 member connected with said work unit in a circumferential trajectory, said guide
6 member having, along said circumferential trajectory, a tangential speed with a
7 work component parallel to said reference speed; and in selectively varying
8 said tangential speed of said guide member and said reference speed of said
9 laminar material in a manner adapted to keep said work component substantially
10 equal to said reference speed at a work stretch of said circumferential trajectory.

1 **17.** A process as claimed in Claim 16, wherein said reference speed is
2 maintained substantially constant and wherein said tangential speed of said
3 guide member is varied in inverse proportion to the cosine of a work angle α

4 included between said tangential speed and said work component.

1 **18.** A process as claimed in Claim 16, wherein said tangential speed is
2 maintained substantially constant and wherein said reference speed of said
3 laminar material is varied in proportion to the cosine of a work angle α included
4 between said tangential speed and said work component.